TECHNOLOGY EDUCATION

Course Title	Recommended Grade Level							Recommended Credit
	6	7	8	9	10	11	12	
Introduction to Communication	x	x	x	xx				½ *
Introduction to Production	x	x	x	xx				½ *
Introduction to Transportation	x	x	x	xx				½ *
Survey of Technology	x	x	x	xx				½ **
xx Only when 9th grade is housed at the middle school *Credit is granted only when offered at the 9th grade level **This course may be scheduled for 1 year or 2 semesters and credit granted only when offered at the 9th grade level								
Overview of Technological Systems				x	x	x	x	2*
Production Systems				x	x	x	x	1
Communication Systems				x	x	x	x	1
Transportation Systems				x	x	x	x	1
Bio-Related Systems				x	x	x	x	1
Construction Technology					x	x	x	1
Drafting/Computer Assisted Design Technology					x	x	x	1
Electricity/Electronics Technology					x	x	x	1
Graphics Communications Technology					x	x	x	1
Manufacturing Technology					x	x	x	1
Special Problems in Technology Education					x	x	x	1
* This course may be scheduled for a two-hour period or offered for two years.								

Overview of Technology Education

Technology education should enrich students' lives in school and beyond. It should assist students in learning to live with technology, while retaining their individual human identity in a world often dominated by technology. Technology education students should learn basic, conceptual content that endures, transcending time and specific application.

Technology education should be about learning to assess when, why, or even *if* technology should be used. These assumptions spring from a belief that, in order for students to fully develop and enhance their technological literacy, a quality technology education program should provide opportunities to

⇒ *Apply a systems approach, 21st century skills (e.g., creative problem-solving, critical thinking, teamwork, leadership, acceptance of personal responsibility), and a variety of resources (including information, tools, and materials) to solve technical problems.*

⇒ *Understand technological systems (e.g., communication, production, transportation, bio-related, and other emerging systems) and the interrelationship between the resource/input, process, output, and feedback elements of these systems.*

⇒ *Use computer-based technologies to communicate, process, manipulate, collect,*

and apply information to solve technical problems.

⇒ *Integrate and apply concepts from mathematics, science, communication, social studies, and the arts in the context of contemporary technology.*

⇒ *Develop competencies in the safe and efficient use of tools, machines, materials, and processes.*

⇒ *Identify opportunities, characteristics, and preparation requirements for current and emerging technological occupations.*

⇒ *Engage in meaningful, hands-on, minds-on, and conceptual technology-based activities.*

⇒ *Become discriminating consumers of technological products and services.*

⇒ *Explore entrepreneurship and its place within the free enterprise system as a means to becoming a self-sufficient individual.*

⇒ *Become participating citizens who can understand, assess, predict, control, and adapt to the impacts and consequences of technology on individuals, society, and the environment.*

⇒ *Understand and appreciate both the importance and the dynamic nature of technology.*

Technology education should be a program in which the disciplines of science, mathematics, social studies, environmental science, history, and philosophy can be integrated and *applied*, allowing students to discover their relevance and meaning in real-world contexts and applications. This has been translated to describe technology education as activity-based instruction offered at the elementary, middle, and high school levels that (a) provides students opportunities to learn about technologies and technological systems that impact society; (b) derives its content from curriculum organizers identified as communications, production, transportation, and bio-related topics; and (c) is an integral part of a comprehensive school program.

Because technology education can be designed with at least three levels of emphasis and from many perspectives, schools may offer courses that focus on a broad spectrum of student interests and needs, ranging from introduction to exploration to preparation levels. This broad focus allows technology education programs to adapt to an ever-changing community and technological environment.

Technology education includes programs offered at the elementary, middle, and high school levels that provide students with opportunities to learn about technological systems and their impact on society's wants and needs. Technology education derives its content from curriculum organizers identified as **production, communications, transportation,** and **bio-related topics.**

Classroom activities focus on materials, information, and systems—with students investigating, devising, communicating, and producing products. Students develop and apply criteria in the development of a product. Portfolio assessment strategies may be used in the assessment process. Technology education is an integral part of each school's comprehensive program, which directly supports Kentucky's Learning Goals and Academic Expectations as specified by the Kentucky Education Reform Act (KERA) of 1990.

Elementary School Program. Technology education at the elementary school level takes an integrated approach. At this level students are made aware of technology and its impact on the world around them. Students explore technology through age-appropriate, hands-on, minds-on activities that include problem solving, creative and critical thinking, and working in teams within thematic units. Implementation of technology education at the elementary school level is best achieved through consultation among elementary and technology education teachers.

Middle School Program. Technology education programs in the middle school provide opportunities for awareness, exploration, and application in the different systems of production, communication, transportation, and bio-related technologies. Instructional approaches typically include the problem solving/design brief using the small/large group instruction or through the modular approach.

A technology education (middle school) subject is generally offered for six to eighteen weeks for a single class period each day. Alternative schedules that provide for equivalent contact hours may also be implemented. A total program of technology education consists of a minimum of two course offerings; however, the technology survey course alone will meet the two course offering requirement if it is offered to students more than once.

High School Program. Technology education at the high school level is a broad-based program that provides students with a foundation in the four technological systems of production, communication, transportation, and bio-technology. The program emphasizes the problem-solving and critical-thinking skills appropriate for all students. Activities in the high school technology education program are designed to make scientific principles relevant by requiring students to apply them to real problems in an activity based learning environment.

Alternative schedules may be implemented that provide for equivalent contact hours. A total program of technology education consists of a minimum of two different course offerings; however, the overview of technology course alone will meet the two course offering requirement if offered to students more than once. Technology education programs may also be offered at the area vocational center, provided a certified technology education teacher teaches the courses.

All programs are required to make provisions to meet the needs of disadvantaged and disabled students. If the nature and severity of the disadvantage or disability is such that the student cannot benefit from program participation, a separate or modified program may be developed. In either case, the program provided shall be consistent with and specified in each special needs student's Individualized Education Program Plan (IEP). The extensive use of laboratory equipment in technology programs may require the provision of teacher aides to assist disabled students (if identified as a component of the IEP).

Student organizations are an integral component of a technology education program. The student organization shall encompass activities associated with program content, provide leadership opportunities, recognize skill development, and enrich the education program through student motivation and group activities. It is recommended that technology education programs be represented by the Technology Student Association (TSA). Districts

seeking vocational funding for technology education programs at the high school level are required to include the student organization (TSA) as an integral part of the instructional program.

Technology education courses develop and enhance students' technological literacy or understanding of how technological systems function and impact society, the environment, and the global economy. Technology education is activity based and includes topics related to invention, intervention, and innovation. Technology education addresses individual rights and responsibilities. It provides opportunities for students to understand technology's impact on their lives. Technology education will enable students to manage and cope with change. Students learn to apply tools, materials, processes and concepts efficiently as these relate to technology. In addition, students develop and apply creative problem solving techniques and critical thinking skills as they apply their knowledge of science, mathematics, and communication to solve realistic problems. Students become wise consumers of technology. They become aware of the multitude of careers and make intelligent career choices. Technology education should be available to all students. Although course content is sequential, no prerequisites are required in the program.

Students are encouraged to participate in cooperative education and other work-based learning experiences. Cooperative Education consists of in-school instruction combined with on-the-job work experience. Specific guidelines are outlined in 705 KAR 4:041. Information on other types of work-based learning are described in detail in document Work-Based Learning Guide 2000, which is available on the KDE web page at: www.kde.state.ky.us/careerandtechnicaleducation/resourcesandpublications.

Technology education must perpetuate its willingness to change as necessary to meet the ever-changing needs of society. The recommended course descriptions in this Framework are responsive to current needs while remaining flexible enough to address the inevitable changes that will occur before the next revision. This latitude is not only intentional but essential. It allows for the professional (certified technology education teacher) educator to address changing societal needs. Where opportunities exist, technology education courses may articulate with industrial education level III, based upon agreement of all parties involved.

Survey of Technology

Course Description: Survey of Technology is a broad based laboratory course that explores topics from the technological systems (production, communication, transportation, bio-related). This course provides study and analysis of materials, products, problems, uses, and developments relative to the technological world. This can be accomplished by a problem solving/design brief using small/large group instruction and/or through the modular approach. Participation in the Kentucky Technology Student Association (KTSA) will also be an integral part of this course.	
Academic Expectations	**Content/Process**

Academic Expectations	Content/Process
	Students will
1.1, 6.3	• define technology.
2.20, 2.1	• identify and become aware of ways technology has been used to meet human needs in the home, school, community, and workplace.
1.11, 2.2	• use technological terminology correctly.
2.20, 6.2	• describe intended and unintended consequences of the application of technological solutions to a variety of problems and identify appropriate and inappropriate applications of technology.
2.16, 1.2	• evaluate the consequences of technological inventions and innovations on people, society, culture, and the environment.
1.16, 2.1	• analyze current and emerging issues (e.g., ethical, social, legal, environmental, political, and privacy) related to technology.
5.1	• explore technological concepts and processes in the contexts of communication, transportation, production, bio-related, and emerging technological systems.
5.2 5.3	• apply core knowledge and technological concepts to solve technical problems.
5.1	• develop and use problem solving and decision making skills to invent, design, and modify devices and systems.
1.16, 5.5	• effectively and safely use tools, machines and materials.
2.15, 5.4	• gather, analyze, and communicate technical information by measuring, reading, and analyzing drawings and other technical sources.
1.16 2.17	• develop technical writing skills using appropriate forms, conventions and styles to communicate ideas and information to diverse audiences for many purposes.
2.37, 2.38 6.2, 6.3	• understand that computers and software are versatile tools used to collect, organize, process, and communicate information and ideas.
	• demonstrate employability and social skills relative to careers.
	• develop personal and professional leadership through participation in KTSA.
	• apply concepts from mathematics, science, and communications in the context of technology education.

Connections
- Kentucky Technology Student Association (KTSA)
- Technology Education Teacher Resource Kit and SCANS Skills
- National Technological Literacy Content Standards

Introduction to Transportation

Course Description: Introduction to Transportation is a broad based laboratory course that explores methods used to move people and products. Four domains are addressed: terrestrial, marine, atmosphere, and space. This can be accomplished by a problem solving/design brief using small/large group instruction or the modular approach. Participation in the Kentucky Technology Student Association (KTSA) will also be an integral part of this course.

Academic Expectations	Content/Process
	Students will
1.3, 2.20	• identify and become aware of ways transportation-related technology has

	been used to meet human needs in the home, school, community, and workplace.
1.11, 2.2	• describe intended and unintended consequences of the application of technological solutions to a variety of problems and identify appropriate and inappropriate applications of transportation technology.
2.20, 5.5	• evaluate the consequences of transportation-related technological inventions and innovations on people, society, culture, and the environment.
2.16, 6.2	
1.16, 6.3	• analyze current and emerging issues (e.g., ethical, social, legal, environmental, political, and privacy) related to transportation technology.
5.1, 5.5	• apply core knowledge and technological concepts to solve technical problems in transportation.
5.5	• develop and use problem solving and decision making skills to invent, design, and modify transportation devices and systems.
1.16	• effectively and safely use tools, machines, and materials.
	• understand that computers and software are versatile tools used to collect, organize, process, and communicate information and ideas.
2.1, 5.3	• identify and analyze transportation-related technological systems and sub-systems and their interaction.
2.17	• interact effectively and work cooperatively with persons from diverse ethnic and cultural backgrounds.
2.36	• identify opportunities, characteristics, and preparation requirements for current and emerging occupations in transportation-related industries.
2.37	• develop strategies and work habits that will lead to success and prepare the student for a future in a technological world.
2.17	• effectively use interpersonal and productive team member skills.
2.37	• demonstrate employability and social skills relative to careers.
2.38	• develop personal and professional leadership skills through participation in KTSA student organization activities.
6.2, 6.3	• apply concepts from mathematics, science, and communications in the context of technology education.

Connections
• Kentucky Technology Student Association (KTSA)
• Technology Education Teacher Resource Kit and SCANS Skills
• National Technological Literacy Content Standards

Introduction to Communication

Course Description: Introduction to Communication is a broad based laboratory course that explores the processes and techniques of encoding, transmitting, receiving, storing, retrieving, and decoding graphic and electronic information. This can be accomplished by a problem solving/design brief using small/large group instruction or through the modular approach. Participation in the Kentucky Technology Student Association (KTSA) will also be an integral part of this course.

Academic Expectations	Content/Process
	Students will
2.7, 2.8	• gather information and communicate by measuring, reading, and

Academic Expectations	Content/Process
	analyzing drawings.
1.16, 6.2 1.1, 1.2	• explore available information technologies, their functions and capabilities.
	• develop technical writing skills using appropriate forms, conventions and styles to communicate ideas and information to different
1.16, 6.2	audiences for different purposes.
1.16, 1.1	• make sense of and communicate ideas through state of the art technologies.
1.1	• use computers and other kinds of technology to collect, organize and communicate information and ideas.
1.11, 2.2	• use communication technology terminology correctly.
	• describe intended and unintended consequences of the application of
2.20, 6.2	technological solutions to a variety of problems and identify appropriate and inappropriate applications of communication
2.20, 2.16	technology.
	• evaluate the consequences of communication-related technological
1.16, 2.1	inventions and innovations on people, society, culture, and the environment.
5.1, 6.3	• analyze current and emerging issues (e.g., ethical, social, legal, environmental, political, and privacy) related to communication technology.
5.5 5.4	• apply core knowledge and technological concepts to solve technical problems in communication.
2.15, 5.4 2.38	• develop and use problem solving and decision making skills to invent, design, and modify communication devices and systems.
	• effectively and safely use tools, machines, and materials.
	• demonstrate employability and social skills relative to careers.
	• develop personal and professional leadership through participation in KTSA.
	• apply concepts from mathematics, science, and communications in the context of technology education.

Connections
- Kentucky Technology Student Association (KTSA)
- Technology Education Teacher Resource Kit and SCANS Skills
- National Technological Literacy Content Standards

Introduction to Production

Course Description: Introduction to Production is a broad based laboratory course that explores content related to performing production processing, constructing, and manufacturing operations. The course also uses technical means to construct resources into goods, standard stocks, and structures. This can be accomplished by a problem solving/design brief using small/large group instruction or through the modular approach. Participation in the Kentucky Technology Student Association (KTSA) will also be an integral part of this course.

Academic Expectations	Content/Process

Academic Expectations	Content/Process
	Students will
2.7, 2.8	• gather information and communicate by creating, measuring, reading, and analyzing drawings.
1.16, 5.5,	• use computers and other kinds of technology to collect, organize and communicate information and ideas.
1.3, 2.20	• identify and become aware of ways production-related technology has been used to meet human needs in the home, school, community and workplace.
1.11, 2.2	• describe intended and unintended consequences of the application of technological solutions to a variety of problems and identify appropriate and inappropriate applications of production technology.
2.20, 6.2	• evaluate the consequences of production-related technological inventions and innovations on people, society, culture, and the environment.
2.20, 2.16	• analyze current and emerging issues (e.g., ethical, social, legal, environmental, political, and privacy) related to production technology.
1.16, 6.3	• apply core knowledge and technological concepts to solve technical problems in production.
5.5, 6.3	• develop and use problem solving and decision making skills to invent, design, and modify production devices and systems.
5.5	• effectively and safely use tools, machines, and materials.
2.38	• develop personal and professional leadership shills through participation in Kentucky Technology Student Association (KTSA) student organization activities.
2.18, 2.16	• understand the dynamic nature of production technology and analyze and interpret historical events, conditions, trends and issues to develop perspective on the impacts of production of goods and structures on people, society, culture, and the environment.
2.36, 2.15	• identify opportunities, characteristics, and preparation requirements for current and emerging occupations in production-related industries.
2.37, 2.38	• develop strategies and work habits that will lead to success and prepare the student for a future in a technological world.
2.29	• demonstrate employability and social skills relative to careers.
6.2, 6.3	• apply concepts from mathematics, science, and communications in the context of technology education.

Connections
• Kentucky Technology Student Association (KTSA)
• Technology Education Teacher Resource Kit, and SCANS Skills
• National Technological Literacy Content Standards

Overview of Technological Systems

Course Description: Overview of Technological Systems is offered to students who have not had courses in the study of technology at the middle school. This course includes the introduction, exploration, and application of topics from technology and the development of technological systems. These courses may be conducted by a problem solving/design brief using small/large group instruction and/or through the modular approach. Participation in the Kentucky Technology Student Association (KTSA) will also be an integral part of this course.

Academic Expectations	Content/Process
	Students will

Academic Expectations	Content/Process
1.2, 1.11	• define technology.
1.1-1.3	• evaluate the consequences of technological inventions and innovations on people, society, culture, and the environment.
2.16,2.18	• analyze current and emerging issues (e.g., ethical, social, legal, environmental, political, and privacy) related to technology.
1.1-1.4	• explore technological concepts and processes in the contexts of communication, transportation, production, bio-related, and emerging technological systems.
2.3 6.1, 6.3	• apply core knowledge and technological concepts to solve technical problems.
1.16 2.17	• understand the dynamic nature of technology and analyze and interpret historical events, conditions, trends and issues to develop perspective on the impacts of technology on people, society, culture, and the environment.
2.36-2.38	
5.1-5.5	• identify opportunities, characteristics, and preparation requirements for current and emerging technological occupations.
	• develop strategies and work habits that will lead to success and prepare the student for a future in a technological world.
2.37, 5.4	• understand technological systems (e.g., communication, production, transportation, bio-related and other emerging systems) and the interrelationship between the resource/input, process, output, and feedback elements of these systems.
2.17	
2.38	• develop competencies in the safe and efficient use of tools, machines, materials, and processes.
6.2, 6.3	• demonstrate employability and social skills relative to careers.
	• develop personal and professional leadership skills through participation in Kentucky Technology Student Association (KTSA) student organization activities.
	• apply concepts from mathematics, science, and communications in the context of technology education.

Connections

• Kentucky Technology Student Association (KTSA)
• Technology Education Teacher Resource Kit and SCANS Skills
• National Technological Literacy Content Standards

Communication Systems

Course Description: Communication Systems is the study of the communication of ideas through graphic representation and electronic technologies. The focus of this course includes the processes and techniques of encoding, transmitting, receiving, storing, retrieving, and decoding graphic and electronic information. Communication concepts are reinforced through the development of products using and exploration in areas such as: graphics, electronic communications, photography and computer applications. Opportunities are provided to apply problem solving and critical thinking skills through the development of a product. Participation in the Kentucky Technology Student Association (KTSA) will also be an integral part of this course.

Academic Expectations	Content/Process

	Students will
6.2, 1.11	• understand and appreciate both the importance and the dynamic nature of communication technologies.
1.3, 6.2	• understand the concept of appropriate technologies as it relates to multi-cultural and global perspectives.
2.36	• identify opportunities, characteristics, and preparation requirements for current and emerging communication technology-related occupations.
1.1	• explore and experience the organization and management structure of communication-related industries.
1.13	• apply core knowledge and technological concepts.
5.1, 6.2	• develop creative problem-solving, critical thinking, teamwork, leadership and personal responsibility skills through collaborative application of communication technologies and the solution of technical problems.
1.16	• use computer-based technologies to communicate, process, manipulate, collect, and apply information to solve technical problems in communication.
2.35, 2.17	
2.31	• apply the systems approach to analyze and solve communication systems-based technical problems.
2.36, 2.38	• demonstrate proficiency in the safe and efficient use and care of equipment, materials, processes, and concepts related to the applications of communications systems technologies.
6.2	• develop personal and professional leadership skills through participation in Kentucky Technology Student Association activities.
2.15, 5.4 6.2, 6.3	• develop skills necessary to work effectively with others to solve problems and make decisions involving human and material resources, processes, and communication related technological systems.
	• demonstrate employability and social skills relative to careers.
	• apply concepts from mathematics, science, and communications in the context of technology education.

Connections

• Kentucky Technology Student Association (KTSA)
• Technology Education Teacher Resource Kit and SCANS Skills
• National Technological Literacy Content Standards

Bio-Related Systems

Course Description: Bio-Related Systems is a broad based course taught is a laboratory setting. Its content is derived from the integration of biological concepts and principles within the field of technology. The focus of this course includes the processes and techniques of propagating, growing, maintaining, harvesting, adapting, treating, and converting biological organisms in the contexts of agriculture, medicine, and biological processes tied to production. The goal of bio-technology is to improve the quality of life through design and development. Participation in the Kentucky Technology Student Association (KTSA) will also be an integral

part of this course.

Academic Expectations	Content/Process
	Students will
2.6, 1.11	• understand and appreciate both the importance and the dynamic nature of bio-related technologies.
6.3	• engage in meaningful, hands-on, minds-on and conceptual activities to apply bio-related concepts, processes, and systems.
2.36	• identify opportunities, characteristics, and preparation requirements for current and emerging bio-related technology occupations.
1.1	• explore and experience the organization and management structure of bio-related technology based industries.
6.2, 6.3	• integrate and apply core knowledge and technological concepts.
5.1, 5.5	• integrate and develop creative problem-solving, critical thinking, teamwork, leadership and personal responsibility skills through collaborative application of bio-related technologies and the solution of technical problems.
1.16	• use computer-based technologies to communicate, process, manipulate, collect, and apply information to solve technical problems in bio-related technologies.
2.3,5.1	• apply the systems approach to analyze and solve bio-related technology systems-based technical problems.
1.3, 1.1	• observe and explore the interrelationships between and among bio-related technology systems and other technological systems.
2.31, 2.36	• demonstrate proficiency in the safe and efficient use and care of equipment, materials, processes, and concepts related to the applications of bio-related technologies.
2.37, 2.38	• develop personal and professional leadership skills through participation in Kentucky Technology Student Association activities.
2.17	• develop skills necessary to work effectively with others to solve problems and make decisions involving human and material resources, processes, and bio-related technological systems.
	• demonstrate employability and social skills relative to careers.
2.17 6.2, 6.3	• apply concepts from mathematics, science, and communications in the context of technology education.

Connections
- Kentucky Technology Student Association (KTSA)
- Technology Education Teacher Resource Kit and SCANS Skills
- National Technological Literacy Content Standards

Transportation Systems

Course Description: Transportation Systems is a broad based course, taught in a laboratory setting, that encompasses how people and products are moved within a society. The focus of this course includes the processes and techniques of receiving, holding/storing, loading, moving, unloading, and delivering people and products. Transportation is examined in the four environments in which it occurs: terrestrial, marine, atmosphere, and space. Specific areas of study include types of vehicles, engineering and design of transportation systems, use of general tool and material processes and how transportation technology impacts social, economic, environmental, and cultural aspects of our world. Opportunities are provided to apply problem solving and critical thinking skills through the development of a product.

Participation in the Kentucky Technology Student Association (KTSA) will also be an integral part of this course.

Academic Expectations	Content/Process
	Students will
1.1, 1.11	• engage in meaningful, hands-on, minds-on and conceptual activities to apply transportation-related concepts, processes, and systems.
1.3, 6.2	• understand the concept of appropriate technologies as it relates to multi-cultural and global perspectives.
2.36	• identify opportunities, characteristics, and preparation requirements for current and emerging transportation technology-related occupations.
6.1	• explore and experience the organization and management structure of transportation-related industries.
6.3	• apply core knowledge and technological concepts.
5.1, 5.5	• develop creative problem-solving, critical thinking, teamwork, leadership and personal responsibility skills through collaborative application of transportation technologies and the solution of technical problems.
1.16	• use computer-based technologies to communicate, process, manipulate, collect, and apply information to solve technical problems in transportation.
2.3, 5.1	• apply the systems approach to analyze and solve transportation systems-based technical problems.
2.31	• demonstrate proficiency in the safe and efficient use and care of equipment, materials, processes, and concepts related to the applications of transportation systems technologies.
5.1, 6.2	• develop skills necessary to work effectively with others to solve problems and make decisions involving human and material resources, processes, and transportation related technological systems.
2.37, 2.38	• develop personal and professional leadership skills through participation in Kentucky Technology Student Association activities.
2.17, 5.4 6.2, 6.3	• demonstrate employability and social skills relative to careers. • apply concepts from mathematics, science, and communications in the context of technology education.

Connections
- Kentucky Technology Student Association (KTSA)
- Technology Education Teacher Resource Kit and SCANS Skills
- National Technological Literacy Content Standards

Production Systems

Course Description: Production Systems is a laboratory course that involves the design and production of a product, with a focus on the processes and techniques of primary procession, constructing, manufacturing, and maintaining. The course will include the study and application of materials, tools, and machines necessary for manufacturing and/or construction processes. Related systems are studied to include the organization of work and factors influencing our economy. Opportunities are provided to apply problem solving and critical thinking skills through the development of a product. Participation in the Kentucky Technology Student Association (KTSA) will also be an integral part of this course.

Academic Expectations	Content/Process
	Students will
5.4, 2.11	• explore entrepreneurship and its place within the free enterprise system as a means to becoming a self-sufficient individual.
2.6	• understand and appreciate both the importance and the dynamic nature of production technologies.
6.3	• engage in meaningful, hands-on, minds-on and conceptual activities to apply production-related concepts, processes, and systems.
1.3, 6.2	• understand the concept of appropriate technologies as it relates to multi-cultural and global perspectives.
2.36	• identify opportunities, characteristics, and preparation requirements for current and emerging production technology-related occupations.
1.1	• explore and experience the organization and management structure of production-related industries.
6.2	• apply core knowledge and technological concepts.
5.1, 5.5	• develop creative problem-solving, critical thinking, teamwork, leadership and personal responsibility skills through collaborative application of production technologies and the solution of technical problems.
1.16	• use computer-based technologies to communicate, process, manipulate, collect, and apply information to solve technical problems in production.
2.36, 2.38	• develop personal and professional leadership skills through participation in Kentucky Technology Student Association (KTSA) activities.
2.31	• demonstrate proficiency in the safe and efficient use and care of equipment, materials, processes, and concepts related to the applications of production systems technologies.
6.2	• develop skills necessary to work effectively with others to solve problems and make decisions involving human and material resources, processes, and production related technological systems.
2.17	• demonstrate employability and social skills relative to careers.
6.2, 6.3	• apply concepts from mathematics, science, and communications in the context of technology education.

Connections
• Kentucky Technology Student Association (KTSA)
• Technology Education Teacher Resource Kit and SCANS Skills
• National Technological Literacy Content Standards

Special Problems

Course Description: Special Problems is a laboratory based course designed to allow the high school student to explore in-depth a recent technological advancement and how this advancement will or could affect society. A culminating project involving other course work is encouraged to include research, analysis, projecting, writing, and presenting. Participation in the Kentucky Technology Student Association (KTSA) will also be an integral part of this course.

Academic Expectations	Content/Process

	Student will
1.1, 6.3	• develop a culminating project, demonstrating the student's knowledge, and intellectual/technological skills and expertise.
1.13, 1.11	• demonstrate communication skills through presentations, reports, and demonstration.
2.3, 5.1	• apply a systems approach, research skills, 21st century skills (e.g., creative problem-solving, critical thinking, teamwork, leadership, acceptance of personal responsibility), and a variety of resources including information, tools and materials to the resolution of a work-based or community based problem.
6.2, 2.17	• demonstrate a thorough understanding of technological systems and their interrelationships.
1.16, 2.36	• use computer based technologies to communicate, process, manipulate, collect, and apply information to solve technical problems.
2.1	• integrate and apply concepts from mathematics, science, communication, social studies, and the arts in the context of contemporary technology.
2.31	• demonstrate competencies in the safe and efficient use of tools, machines, materials, and processes.
6.3, 5.1	• engage in meaningful, hands-on, minds-on, and conceptual technology-based activities.
6.2	• demonstrate an understanding of entrepreneurship and its place within the free enterprise system as a means to becoming a self-sufficient individual.
2.19	• demonstrate that they have become participating citizens who can understand, assess, predict, control and adapt to the impacts and consequences of technology on individuals, society and the environment.
2.36, 2.38	• develop personal and professional leadership skills through participation in Kentucky Technology Student Association activities.
2.17, 5.4	• demonstrate employability and social skills relative to careers.
6.2, 6.3	• apply concepts from mathematics, science, and communications in the context of technology education.

Connections

• Kentucky Technology Student Association (KTSA)
• Technology Education Teacher Resource Kit and SCANS Skills
• National Technological Literacy Content Standards

Construction Technology

Course Description: Construction Technology is a broad based course taught in a laboratory setting. The course emphasizes the construction of a product, which includes the study of structural design and engineering, structural building techniques, and the organization of a construction enterprise and its impact upon the environment. Opportunities are provided to apply problem solving and critical thinking skills through the development of a product. Participation in the Kentucky Technology Student Association (KTSA) will also be an

integral part of this course.

Academic Expectations	Content/Process
	Students will
2.20, 1.1	• develop an awareness of the significance of construction technology in the past, present, and future.
5.5, 1.11	• apply individual and group problem-solving skills in construction technology.
2.31, 5.1	
1.2, 1.3	• develop responsible and safe work attitudes and the ability to function as a member of a team.
5.2	• develop an understanding of construction technology and all its sub-systems.
1.2, 6.3	
	• use and adapt current and emerging construction materials and techniques.
5.1	• develop an understanding of structural design and the engineering necessary to construct a safe efficient structure.
1.2, 1.3	• use critical thinking skills to design a structure utilizing appropriate applications of technologies.
1.2, 6.2	• appreciate, understand, and perform selected management practices in planning, organizing, and controlling as they relate to the construction enterprise and its related activities.
6.2, 2.17	• appreciate and understand the interrelationships within and between management, personnel, and production practices.
6.2, 6.3	• understand the relationship between construction technology, community development and the environment.
2.36, 2.38	• develop a culminating project, drawing upon the student's knowledge and experiences in construction technology.
2.17, 5.4 6.2, 6.3	• develop personal and professional leadership skills through participation in Kentucky Technology Student Association activities.
	• demonstrate employability and social skills relative to careers.
	• apply concepts from mathematics, science, and communications in the context of technology education.

Connections
- Kentucky Technology Student Association (KTSA)
- Technology Education Teacher Resource Kit and SCANS Skills
- National Technological Literacy Content Standards

Drafting/Computer Assisted Design Technology

Course Description: Drafting/Computer Assisted Design Technology is a comprehensive, laboratory based course which includes the fundamentals of drafting. Sketching, board drafting, and computer applications in drafting and design will be emphasized. Students will use design briefs to solve drafting related problems in the four technology systems. Opportunities are provided to apply problem solving and critical thinking skills through the

development of a product. Participation in the Kentucky Technology Student Association (KTSA) will also be an integral part of this course.

Academic Expectations	Content/Process
	Students will
6.1, 6.3, 1.16, 1.11	• apply core knowledge in the context of drafting/computer assisted design.
2.31, 1.16	• use computer based technologies to communicate, process, manipulate, collect, and apply information to solve technical problems.
2.36, 2.17	• develop competencies in the safe and efficient use of the tools, machines, materials, and processes of drafting/computer assisted design
6.3, 2.36	• identify opportunities, characteristics, and preparation requirements for current and emerging occupations in drafting/computer assisted design.
1.1, 5.14	• engage in meaningful, hands-on, minds-on, and conceptual technology-based activities.
6.2, 2.38	• explore entrepreneurship and its place within the free enterprise system as a means to becoming a self-sufficient individual.
6.2	• become participating citizens who can understand, assess, predict, control and adapt to the impacts and consequences of drafting/computer assisted design technology on individuals, society and the environment.
5.1, 5.5	• understand the concepts of drafting/computer assisted design. • develop and apply problem solving, critical thinking skills and creativity to drafting/computer assisted design problems.
2.36, 2.38	• develop personal and professional leadership skills through participation in Kentucky Technology Student Association activities.
1.13	• communicate ideas through application of drafting fundamentals (e.g., sketching, multi-view drawings, 3D renderings).
6.2	• experience and develop an understanding of the different sub-specialties within drafting/computer assisted design (e.g., mechanical, architectural, electrical).
2, 6.3	
2.17, 5.4 6.2, 6.3	• apply knowledge and experiences from drafting/computer assisted design to produce a culminating project. • demonstrate employability and social skills relative to careers. • apply concepts from mathematics, science, and communications in the context of technology education.

Connections
• Kentucky Technology Student Association (KTSA) • Technology Education Teacher Resource Kit and SCANS Skills • National Technological Literacy Content Standards

Graphic Communications Technology

Course Description: Graphic Communications Technology is a broad based technological program that deals with tools, techniques, knowledge, the sending/receiving of messages and other technical processes unique to the area of communications technology. This course

includes an overview of each process and proceeds to individual exploration, examination, experimentation and evaluation of different graphic communication processes. Opportunities are provided to apply problem solving and critical thinking skills through the development of a product. Participation in the Kentucky Technology Student Association (KTSA) will also be an integral part of this course.

Academic Expectations	Content/Process
	Students will
1.16, 1.11	• use computer-based technologies to communicate, process, manipulate, collect, and apply information to solve technical problems in graphic communication.
6.1	
2.31	• apply concepts from mathematics, science, communication, social studies, and the arts in the context of contemporary graphic communication technology.
2.36, 6.1	• develop competencies in the safe and efficient use of the tools, machines, materials, and processes of graphic communication.
6.3	• identify opportunities, characteristics, and preparation requirements for current and emerging occupations in graphic communications.
2.30, 1.16	• engage in meaningful, hands-on, minds-on, and conceptual technology-based activities.
2.36, 2.38	• become discriminating consumers of graphic communications products and services.
1.13, 2.36	• develop personal and professional leadership skills through participation in Kentucky Technology Student Association activities.
1.16, 5.2	• communicate visually using new and traditional graphic communication tools, techniques and materials.
5.1, 5.2	• produce a document using the computer and desktop publishing software as tools.
5.3	• create and process photographic images using both traditional camera/film technology and computer acquisition/enhancement technology.
1.11, 1.13	
1.13,1.15	
1.13	• produce a product applying the offset printing process.
	• write, develop, edit, and produce an effective video message.
2.17, 5.4	• animate a visual image.
6.2, 6.3	• convey a message through application of traditional and emerging screen printing processes.
	• demonstrate employability and social skills relative to careers.
	• apply concepts from mathematics, science, and communications in the context of technology education.

Connections
• Kentucky Technology Student Association (KTSA)
• Technology Education Teacher Resource Kit and SCANS Skills
• National Technological Literacy Content Standards

Manufacturing Technology

Course Description: Manufacturing Technology is a broad based course taught in a laboratory

setting. Its content includes the study of and use of the materials, processes, tools, and machines associated with manufacturing systems. The content also includes product research, design and engineering, as well as organization, operation, and management of a manufacturing enterprise. Opportunities are provided to apply problem solving and critical thinking skills through the development of a product. Participation in the Kentucky Technology Student Association (KTSA) will also be an integral part of this course.

Academic Expectations	Content/Process
	Students will
6.1, 1.11	• apply concepts from mathematics, science, communication, social studies, and the arts in the context of contemporary manufacturing technology.
2.31, 1.16	• develop competencies in the safe and efficient use of the tools, machines, materials, and processes of manufacturing.
2.36	• identify opportunities, characteristics, and preparation requirements for current and emerging occupations in manufacturing.
6.3, 2.17	• engage in meaningful, hands-on, minds-on, and conceptual technology-based activities.
2.30, 2.36 1.1, 2.37	• become discriminating consumers of products and services. • explore entrepreneurship and its place within the free enterprise system as a means to becoming a self-sufficient individual.
6.1, 6.2	• demonstrate knowledge of the processes, materials, tools, and machines utilized in modern manufacturing.
2.31	• demonstrate proficiency in the safe and efficient use and care of equipment, materials, processes and concepts used in modern manufacturing applications.
5.1, 5.2	• use problem-solving and critical-thinking skills to identify, evaluate and produce appropriate solutions to specific manufacturing problems.
2.36, 2.38	• develop personal and professional leadership skills through participation in Kentucky Technology Student Association activities.
6.2	• understand the function of the manufacturing enterprise as managing resources and processes to research, design, produce ands sell products with the goal of making profit.
1.2	• demonstrate a thorough understanding of the design and production processes related to manufacturing.
6.2	• demonstrate skill in reading and applying information contained in technical drawings, technical literature and design briefs.
2.17, 5.4 6.2, 6.3	• develop skills necessary to work with others to solve problems. • apply concepts from mathematics, science, and communications in the context of technology education.

Connections
• Kentucky Technology Student Association (KTSA)
• Technology Education Teacher Resource Kit and SCANS Skills
• National Technological Literacy Content Standards
• Kentucky Occupational Skill Standards

Electricity/Electronics Technology

Course Description: Electricity/Electronics Technology is a broad based survey course taught in a laboratory setting. Its content includes AC/DC circuit design, solid state devices and circuit analysis, digital and microprocessor fundamentals, and communication electronics. Circuits are constructed and electrical quantities are calculated and measured. Opportunities are provided to apply problem solving and critical thinking skills through the development of a product. Participation in the Kentucky Technology Student Association (KTSA) will also be an integral part of this course.

Academic Expectations	Content/Process
	Students will
6.1, 1.11	• apply concepts from mathematics, science, communications, in the context of contemporary electricity/electronics.
2.31, 1.16	• develop competencies in the safe and efficient use of the tools, machines, materials, and processes of electricity/electronics.
2.36	• identify opportunities, characteristics, and preparation requirements for current and emerging occupations in electricity/electronics.
6.3, 2.17	• engage in meaningful, hands-on, minds-on, and conceptual technology-based activities.
2.30, 2.36	• become discriminating consumers of electrical products and services.
2.14, 2.37	• explore entrepreneurship and its place within the free enterprise system as a means to becoming a self-sufficient individual.
6.2, 2.38	• become participating citizens who can understand, assess, predict, control and adapt to the impacts and consequences of electricity/electronics technology on individuals, society and the environment.
5.1, 6.1	• contrast and analyze circuits in digital, microprocessor, and communication electronics.
2.8, 2.10	• calculate and measure values of the components in electrical circuits.
6.2	• apply the principles of electricity/electronics.
6.2, 6.3	• apply electricity/electronics principles and techniques, core knowledge and problem solving and critical thinking skills to the development of a culminating project.
2.36, 2.38	• develop personal and professional leadership skills through participation in Kentucky Technology Student Association activities.
2.17, 5.4	• demonstrate employability and social skills relative to careers.

Connections

- Kentucky Technology Student Association (KTSA)
- Technology Education Teacher Resource Kit and SCANS Skills
- National Technological Literacy Content Standards